

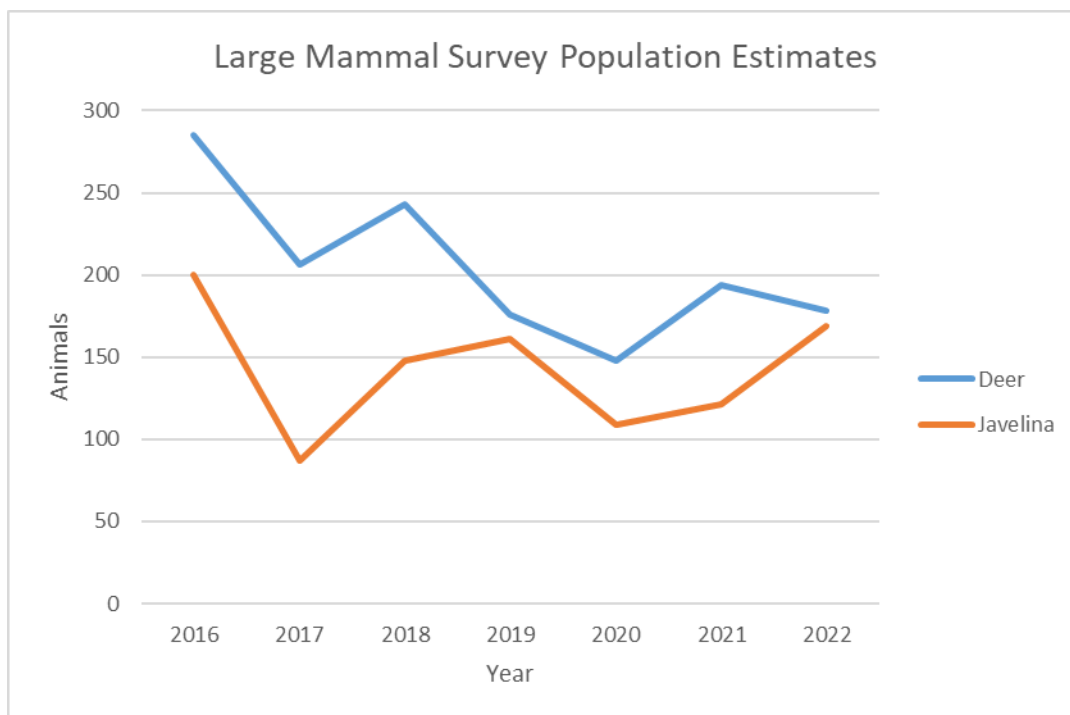
2022 Deer and Javelina Survey Results for the McDowell Sonoran Preserve

Collaborative efforts between the Arizona Game and Fish Department (Department), the City of Scottsdale (City) and the McDowell Sonoran Conservancy (MSC) resulted in aerial surveys of large mammals (deer and javelina) in the McDowell Sonoran Preserve (Preserve) and data collection for these populations spanning roughly a decade. In May of 2023, the Arizona Game and Fish Department and the City of Scottsdale renewed the Wildlife Study Agreement for aerial surveys for deer and javelina for an additional five years through 2028. With data from these flights, managers will be able to continue to estimate deer and javelina populations as well as monitor herd health within the Preserve for the length of the study agreement.

Low level helicopter surveys were performed on January 11, 2023 for survey year 2022 with wildlife managers from the Arizona Game and Fish Department as well as a member of the City of Scottsdale staff. Surveys totaled 4.0 hours covering approximately 203 miles of transect distributed throughout the Preserve (approximately 54 square miles). The total number of deer and javelina observed during the 2022 survey are included in the appendix at the end of this report.

POPULATION ESTIMATES:

Based on 2022 survey data the resulting population estimate for the Preserve is 178 deer and 169 javelina. The graph below shows annual population estimates for the Preserve since 2016.



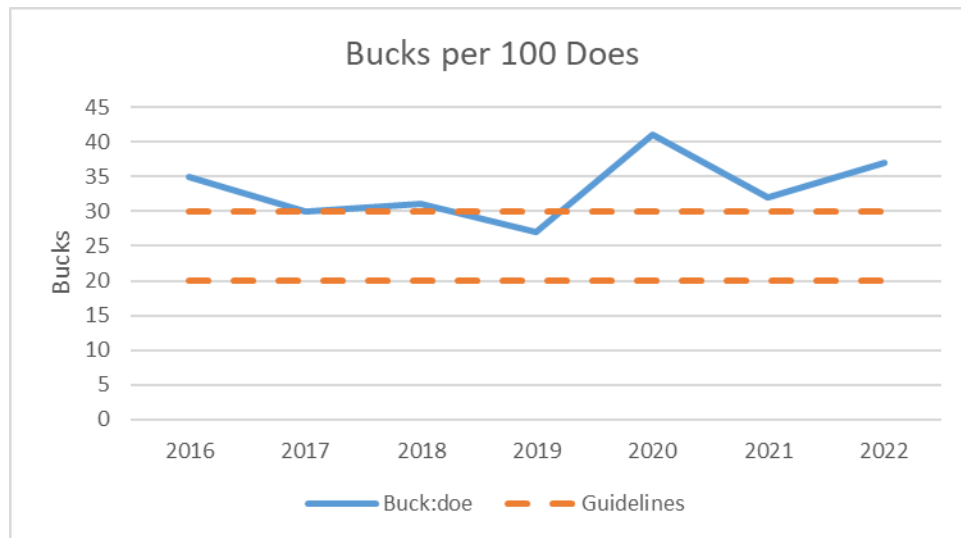
While surveys allow for the calculation of a relative abundance of wildlife, managers historically place more emphasis on evaluating ratios of males, females, and juveniles within the population as well as multi-year trends in data to make assessments and inferences about the health of hunted populations.

DEER ANALYSIS

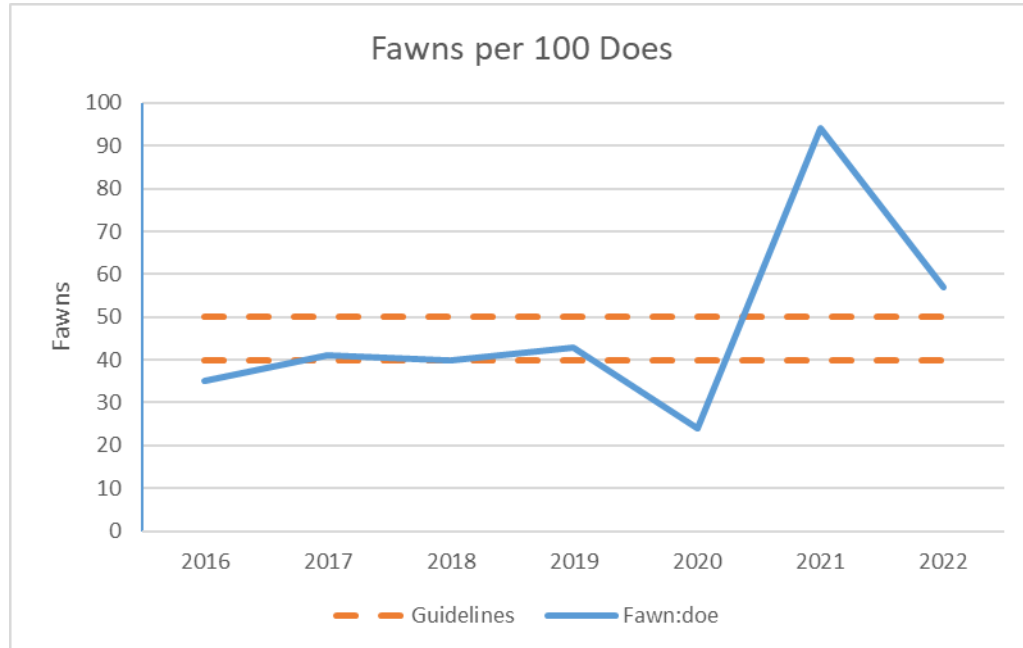
Survey data over the last several years has shown deer density for the Preserve to be higher than other areas in the state with similar habitat, and this trend has continued in 2022 with an estimated deer density of 3.29 deer/mi² in the preserve compared to 1.5-2.0 deer/mi² in similar Game Management Units (GMUs). There was an increase in total number of deer physically observed from the helicopter in 2022 relative to 2021 (122 from 106, respectively), however overall population estimate decreased over this same timeframe due to calculated observation rates. The 2022 deer estimate of 178 decreased from last year's 194. These fluctuations in population estimates based on survey observations can be attributed to numerous factors including changes in personnel on the survey flights as well as weather conditions.

During survey flights it was noted that construction and development continues to increase on the periphery of the preserve, which may impact deer location, habitat utilization, and dispersal within it. Due to the relative size of the Preserve and its connection with the McDowell Mountain Regional Park and Tonto National Forest, deer populations within the Preserve may be impacted by immigration and emigration movements to utilize habitat not included in this survey. These variances from year to year are why management guidelines rely upon three to five year averages and data trends rather than solely on any one given year.

The Department's deer management goal is to maintain and, where possible, enhance deer populations at levels that provide maximum and diverse recreational opportunities, while avoiding adverse impacts to the species and its habitat. Department deer management guidelines consist of a set of management targets for several population indices. These guidelines have prescribed upper and lower bounds, which are tied directly to wildlife science and research, and they inform harvest prescriptions to maintain, increase, or decrease hunting opportunity through permits or season length. These guidelines are set with the intention to foster healthy, resilient and self-sustaining populations. When population trends occur above guidelines, this suggests that there is an increased potential for population growth and/or harvest opportunity. Conversely, population trends occurring below guidelines suggest low potential for population growth and maintenance at the current hunting opportunity, or even potentially a reduction in opportunity or season lengths. The Department places emphasis on the trend in population data over three to five years when making assessments and management decisions. The population ratios of bucks per 100 does and fawns per 100 does are used (among others), to assess deer populations by the Department. The 2022 Department deer management guidelines and Preserve survey results are shown in the graphs below.



The graph above shows the relative abundance of adult male deer to adult female deer. Values above 30:100 over multiple years would indicate male (buck) harvest could be increased without impacting the survivability of the population. There is no biological detriment to the deer herd being above guidelines. Values below 20:100 over multiple years may indicate a need for a decrease in hunting opportunity (permits or season length). The number of bucks to does is a management driven index largely dependent on the intensity of buck harvest.



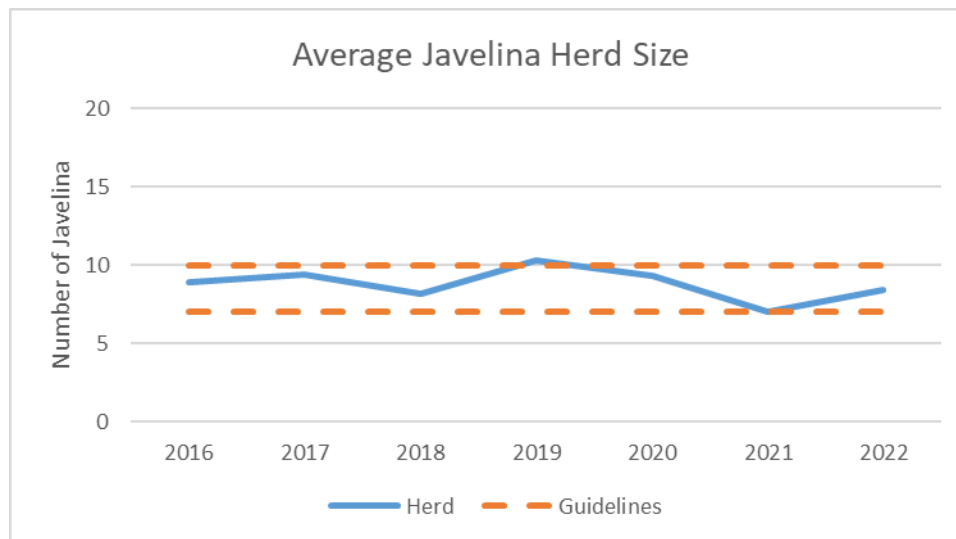
The graph above shows the relative abundance of juvenile deer (animals less than 1 year old) to adult female deer. Any value above 50:100 indicates potential for population growth. Values below 40:100 over multiple years may indicate a need for a decrease in hunting opportunity (permits or season length). However, when buck to doe ratios are within or above guidelines, the

fawn:doe ratio is influenced to a greater degree by habitat quality and predation pressure, which have a more direct impact on increased annual natality and recruitment. A possible explanation for the dramatic changes in the fawn:doe index over the last 3 years may be tied to precipitation and its effect on the quality of forage and habitat in the Preserve. The survey conducted for year 2020 was preceded by lack of precipitation and poor habitat conditions, while during the 2021 survey year the Preserve experienced several significant precipitation events, resulting in an improvement in both forage and cover for deer on the Preserve. The improvement in habitat conditions likely contributed to the drastic recovery in fawn survivability reflected on the graph above, and was possibly a key factor in maintaining the fawn:doe index above guidelines through survey year 2022.

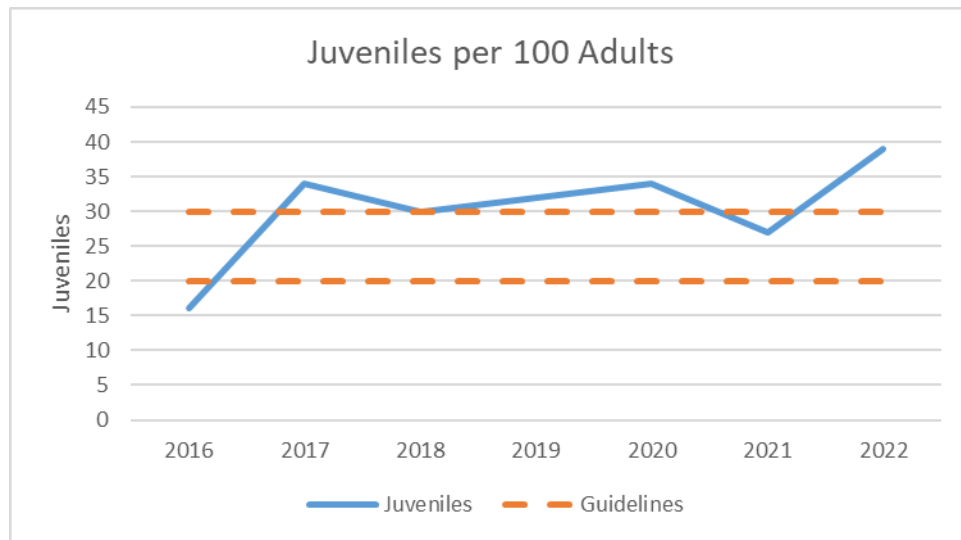
JAVELINA ANALYSIS

The 2022 javelina estimate (169) is an increase from the 2021 survey (121), and three year trends indicate a stable population in the Preserve. Survey intensity (miles of transect length) within the Preserve would need to be increased to predict population abundance with a reliable degree of precision. This is due to the limited sample size, or number of javelina observations recorded per survey effort.

The Department's javelina management goal is to maintain javelina populations at levels that provide diverse recreational opportunities, while avoiding adverse impacts to the habitat, and minimize substantiated depredation and nuisance complaints. Javelina population indices of average herd size and number of juveniles to 100 adults are used, among others, to assess javelina populations by the Department. The 2022 Department javelina management guidelines and Preserve survey results are shown in the graphs below.



The graph above shows the average number of javelina per herd. Values above ten for multiple years would indicate harvest could be increased without impacting the survivability of the population. There is no biological detriment to the herd average being above guidelines. Values below seven javelina per herd over multiple years may indicate a need for a decrease in hunting opportunity (permits or season length).



The graph above shows the relative abundance of juvenile to adult javelina. The three year average is 33:100 which is slightly above guidelines. Any value above 30:100 indicates increased potential for population growth. Values below 20:100 over multiple years may indicate a need for a decrease in hunting opportunity (permits or season length).

As previously stated, wildlife managers place emphasis on trends in population indices to make assessments and inferences about the health, or fitness, of hunted populations. Based on average herd size and juvenile to adult ratios occurring within or slightly above guidelines, survey data in the Preserve indicates that the javelina population is stable and healthy.

HARVEST DATA

The 2022/2023 Over The Counter (OTC) archery hunt season was the first in which a harvest threshold was adopted, which would close the unit to hunting for the remainder of the season once met. This change was instituted for all OTC archery deer seasons across the state by the Arizona Game and Fish Department, and also includes a mandatory reporting requirement for any animal harvested. For Game Management Unit (GMU) 25M, which encompasses both the McDowell Mountain Regional Park as well as the Preserve, the threshold for deer harvest was set to 30 antlered deer. This threshold was based on historical hunter harvest data that was submitted to the Arizona Game and Fish Department through voluntary hunter harvest questionnaires over the last several years. This threshold not only reflects the level of harvest that the preserve has historically supported, it also creates a mechanism to close the season early to deer hunting if that threshold is met before January 31st. For the 2022/2023 season, 20 deer were reported harvested and one reported as unable to be recovered, with the season remaining open for the full length of time from December 9, 2022 to January 31, 2023. The number of deer reported harvested this season is down from the reported 27 deer from the previous year's Archery Deer Questionnaire.

Approximately 78 hunters submitted voluntary hunter declarations for the McDowell Sonoran Preserve through the City of Scottsdale's website during the 2022/2023 deer and javelina

season. This was up from approximately 50 declarations from the previous year. This was the first year that the responses were separated by species, however 19 responses were received before the edit was made to the online form and do not differentiate between intended species. Of the 59 remaining forms, 43 indicated that they intended to hunt either deer alone, both deer and javelina, or deer, javelina, and mountain lion. These forms do not capture the actual days spent in the field, but instead the hunter's intent to hunt the Preserve, from which trailheads, and for how many days. There is no analogous form or hunter information available for hunters utilizing the adjacent McDowell Mountain Regional Park. It is unknown what percentage of hunters do not voluntarily submit declarations. Declarations are submitted prior to hunters taking to the field and do not accurately represent hunter-use days.

REPORTED INCIDENTS

The Department received no substantiated Operation Game Thief (OGT) reports of hunter trespass during the 2022/23 season. The Department issued no citations for take of wildlife in the Preserve.

During the 2016/17 archery deer and javelina season, residents in the area west of Tom's Thumb filed several complaints of people archery hunting within one-quarter mile of residences which at that time was prohibited in the Scottsdale McDowell Sonoran Preserve per Arizona Game and Fish Department Regulations. To address the neighborhood concerns, staff from the Arizona Game and Fish Department and the City of Scottsdale installed signage and produced detailed maps notifying hunters of the one-quarter mile closure. These efforts were successful in encouraging compliance with the quarter mile rule. On November 3, 2019 Commission Rule R12-4-303h made it unlawful for any person to discharge an arrow or any other archery equipment within one-quarter mile of an occupied structure anywhere in Arizona. Applying the quarter mile rule to the entire state in conjunction with signage efforts within the Preserve keeping pace with increasing development around the Preserve's periphery appears to have further promoted ongoing compliance.

Appendix
2022 Large Mammal Survey Observations

2022 MSP Aerial Survey Results			
Survey Location: Browns Ranch			
Hours Surveyed: 0.9			
Deer		Javelina	
Bucks	7		
Does	14	Juveniles	5
Fawns	8	Adults	12
Total	29	Total	17

2022 MSP Aerial Survey Results			
Survey Location: McDowell Mountains			
Hours Surveyed: 3.1			
Deer		Javelina	
Bucks	16		
Does	49	Juveniles	21
Fawns	28	Adults	54
Total	93	Total	75

2022 MSP Aerial Survey Results			
Survey Location: Preserve			
Hours Surveyed: 4.0			
Deer		Javelina	
Bucks	23		
Does	63	Juveniles	26
Fawns	36	Adults	66
Total	122	Total	92